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NOTICES.

THE *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price Two Pence, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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NOTES.

The Explosion at Tutbury.—Relative to the paragraph upon this subject, which appeared on page 142 of last issue, from further particulars received we learn that the manager of the Decorative Tiles Company was experimenting with a mixture of oxygen and acetylene, so that perhaps it was a little incorrect to call the explosion "An acetylene explosion."

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Removal.—So as to have all departments of their business at one address, Messrs. Clements & Gilmer, opticians, have transferred their store rooms and offices from 8 & 10, Rue de Malte to 148, Faubourg St. Martin, Paris, where the building is fitted with elaborate and expensive machinery.

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Useful Arts and Handicrafts.—Every Thursday it is the intention of Messrs. Dawbarn & Ward, Limited, to issue at 6d. a book of some subject embracing useful arts and handicrafts. The first two numbers which have just been published are on the subjects of designing and carving, and are of a high standard. Already some 80 subjects have been announced, and the series will form a complete reference library.

Death of the Dover Photographic Society.—On the books of this society were enrolled the names of the leading and professional gentlemen in the town. The treasurer had a balance of nearly five pounds, yet so little interest did the members take in the proceedings of the society that the committee felt that it was gradually dying a natural death, so at a meeting it was suggested to kill the society outright rather than allow the state of matters to go on, and this was confirmed. The balance in hand has been handed over to the Natural History Society. There is now therefore no Dover Photographic Society. The same remedy might with advantage be applied to one-half of the photographic societies in existence, which are too often started by a clique desirous of holding office.

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Professor B. J. Malden.—This popular lantern lecturer, whose name has long been a household word, has at last decided to retire. Mr. Malden has probably made more money by his lantern lectures than any other lecturer. Many of his special slides and apparatus have been purchased by the Polytechnic, but there is yet a chance for buyers by applying to him at "Tremere," Alexandra Road, Finsbury Park, London, N.

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The Lantern at Birmingham.—The Birmingham Temperance Society continues to draw immense crowds, the 2,000 seats usually provided being all filled within a minute or two of the doors of the Queen's Theatre being opened on Sunday evenings. The lectures and music are of special interest, and with Mr. Alfred H. Saunders officiating at the lantern in the centre of the dress circle, failure is impossible. Among Birmingham lantern enthusiasts the name of Mr. W. T. Butler stands out prominently, and he knows that the lantern is capable of drawing a crowd on Sundays and holding it too. For six years he has been running a lantern mission nine months out of the twelve. When this mission was first started various means were tried to draw an audience but with little success, and the large committee who assisted dwindled down to four only. One suggested to try the lantern, but as there were no funds available they borrowed the money from themselves and bought an oil lantern which was afterwards fitted with limelight. The audience gradually increased in size and the borrowed money was returned. Then better apparatus was suggested in the form of a bi-unial, and £40 were borrowed from the committee, the result being that the hall at Halesowen, Birmingham, which holds 400, is filled every Sunday evening, and £30 of the money advanced has been returned.

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Photographic Trade Marks.—Some time ago an application was put in at the Trade Marks Office for the registration of the word "Pakko" as a general name for photographic papers. This has now been refused by the Registrar on the ground of its similarity to existing names. Kodak, Limited, opposed the application on the ground of the likeness of the word "Pakko" to the well-known Eastman papers, Nikko and Dekko, and because the word could very easily be transposed into "Kopak"; and this opposition has been upheld. The application for the registration of the word "Pakko" was made in all the photographic classes, viz., Nos. 1, 8, 15, and 39, and was refused in all. Similarly, the application to register the word "Simplio" for a photographic paper has been withdrawn, in view of the opposition on the part of Kodak, Limited; the word "Simplio" being likely to cause confusion with the registered trade mark "Solio." The trade name "Sylvio" has been also dropped for the same reason.

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Transvaal War.—His Grace The Duke of Newcastle has undertaken to furnish a complete outfit of apparatus for Röntgen ray work to the Princess of Wales's Hospital Ship, and a private donor has made a similar gift for the S.S. "Spartan." Both installations will be under the direction of Mr. John Lecouteur, the well-known expert. The only plates used will be Lumière's special X-ray series, which are to be developed with "Hydramine," the new developer. The other chemicals employed will also be Lumière specialties, while the paper prints themselves will be made on Lumière's citrate P.O.P.

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Edinburgh Photographic Society's Exhibition.—The annual exhibition in connection with this society will be held at 38, Castle Street, Edinburgh, from Saturday 10th to Saturday 24th February, 1900. A special gold medal will be offered by the president for the best picture, the work of an amateur member. Several medals will be awarded in connection with the usual classes, of which there are nine. Full particulars may be obtained from the Hon. Sec., Mr. J. S. McCulloch, 10A, George Street, Edinburgh.

Explosion at a Lantern Entertainment.—On the day of going to press with our last issue, a lantern lecture at Tiverton on behalf of Dr. Barnardo's Homes came to a sudden termination just as it was commencing, owing to an explosion. In the stampede which followed, three ladies were slightly injured. An expert, who examined the apparatus, expresses the opinion that the operator, who was using an ether saturator, had an overcharge of ether, the vapour from which had reached the cylinder regulator, and that when lighting up, the direct oxygen was first turned on instead of the vapourised oxygen, and a light applied. The regulator was well burned, and pieces of it were picked up in various parts of the hall, some as far as 20 yards off.

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The Transvaal and South Africa.—A series of lantern photographs from Nature of places of great interest just now have been published by Mr. J. H. Steward, of 406, Strand, London, by the special permission of the Cape Government Railway. They include Mafeking, Bulawayo, Aliwal North, Bridges over the Orange and Modder Rivers; also Colesburg. In all there are about 50 slides in this set.

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Telegraph Cypher for Newton's Slides.—In the new catalogue issued by Messrs. Newton & Co., of Fleet Street, they have adopted a distinguishing letter or letters, such as A, B, C, L, T, etc., for their different sets of slides, an arrangement which will greatly expedite matters with those ordering sets by telegram. With one or two exceptions all the slides of this firm are now made at their new factory, and we learn that their popular set of slides of South Africa and the Transvaal are being added to.

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Biokam Film Subjects.—Numerous film subjects have lately been prepared by the Warwick Trading Company, Limited, Warwick Court, Holborn, for use with the popular Biokam. Each film is 25 feet long, and is sold at 10s. The pictures being very small in proportion to those of (say) Edison gauge, the number of pictures contained on a 25 feet Biokam film is about equal to an Edison gauge film of double the length.

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New Film Subjects for the Cinematograph.—It may perhaps not be known to some of our readers that Messrs. Fuerst Brothers, 17, Philpot Lane, E.C., have just issued many excellent films, such as the departure of troops, etc.; and also many humorous sets.

Optical and Mechanical Effects for the Lantern.—No. XIII.

By EDMUND H. WILKIE.

(Late Royal Polytechnic Institution.)

IT is a constant source of surprise to the specialist in lantern work to discover the very cramped ideas of most lanternists with regard to mechanical and dissolving effects. They appear in most cases to imagine that all that can be done in this respect has already been accomplished, and that nothing remains for us to do but continue the same old round of subjects year after year or abandon effects altogether. This idea I think mainly arises from the fact that the majority of opticians' catalogues contain subjects with which we were familiar in early youth, and that only on very rare occasions are novelties offered. But the fault does not rest altogether with the dealers; they do not as a rule (even at Christmas time) conduct their businesses on purely philanthropic lines and cannot afford to produce a succession of optical novelties unless each subject meets with sufficient demand to justify its existence.

The production of a new effect set is always expensive, frequently worrying and tedious, and almost invariably demands

more attention

and absorbs more time than it pays for, hence the paucity of novelties.

Many exhibitors say that at the present time they cannot obtain fees of sufficiently magnificent dimensions to allow them to exhibit the class of work they would desire, but they lose sight of the truism that before we can gather the harvest we must sow the seed. As an instance, we may quote the case of a public exhibitor who was recently fitted out by the writer with views and apparatus. Commencing only this season, he is now booking an average of two lectures a week at five guineas each, but mark this, his pictures are gems; where he exhibits once he goes again, and sometimes at very short intervals. Good work pays, but the modern exhibitor appears to be sceptical as to that fact. We cannot insist too much or too often upon these two points, colour, and scenic effect, without these the exhibition is foredoomed to failure. In this paper we treat upon two effects or mechanical slides which are absolutely unique, and of which only one of each has ever been made to the writer's knowledge.

There is in Palestine somewhere, a bridge crossing a small stream, and the parapet of this bridge rising from each end comes to a point in the centre resembling an inverted V. The angle however is not so acute, in fact it is so obtuse that given a bridge of say 4 inches in length the rise in the centre would not be more than half-an-inch. The bridge crosses almost the entire width of the picture, and as it stands in the track of caravans, we wish if possible to represent it at the exact moment that a train of laden camels is passing across. If we paint the camels upon a slip of glass they disappear as they near the centre of the bridge, being hidden by the rise in the parapet, therefore a straight slipping glass will not give us the effect we wish to obtain. We may it is true tilt the guide upon which the glass runs, but in that case the camels would continue ascending and would not descend on the other side of the bridge.

It is clear that to cause our camels to change the direction of their path after passing the apex of the bridge they must be painted upon some substance, or mounted in such a manner that the procession is flexible and not rigid, as is usually the case. No such substance being known to us at present, we must overcome the difficulty by mechanical means. The whole of the machinery is laid out in Fig. XXXIX.

We see that it consists essentially of a wooden frame of suitable size, in the centre of which is cut a round hole 3 inches in diameter, this being filled by a circular glass; and this glass is blacked entirely over, with the exception of a small portion left clear to show the train of camels. On the top of this, in the position shown in our diagram, is screwed a thin piece of hard wood, the upper edge of which is cut to the exact shape of the parapet of the bridge in our foundation picture. This is about one-eighth of an inch in thickness, and is extended as a guide along which the flexible train of camels is to pass. At either end of this piece of hard wood, very close to it but not quite touching, are large wooden wheels also one-eighth of an inch in thickness, and round these wheels and across the top of the wooden block passes a tightly stretched endless band composed of the strongest kind of tape.

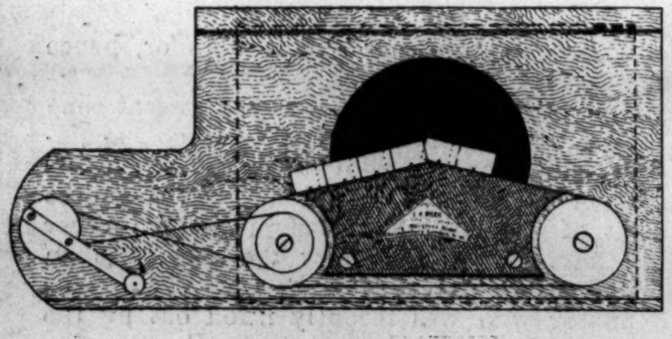


Fig. XXXIX.

To facilitate its working the top of the wooden block is not only made very smooth, but is carefully coated with powdered black-lead. On this band are rivetted a number of small squares of mica, which overlap each other to prevent any blank space intervening when the procession is bent as it passes over the point in the centre of the bridge. On each of these pieces of mica is painted a camel, and on reference to our diagram the method of moving the whole arrangement will be at once apparent. To keep all the various portions in their places a plate of glass is then placed over the whole, as shown by the dotted lines in our illustration.

One of the most ingenious mechanical motions ever applied to the production of optical effects upon the screen was exhibited in connection with an entertainment founded upon Weber's opera of "Der Freyschutz." Those acquainted with this opera will remember the thrilling and dramatic incantation scene, in the course of which the magic bullets are cast. At each casting the light from the brazier changed colour, and a variety of weird and grotesque apparitions appeared floating in the air, seated upon the rocks, and crawling upon the ground. The most natural of these appearances was a wriggling serpent, which contorted its body in an extremely realistic manner, and which entering on the left side of the picture crawled across the foreground and disappeared upon the right.

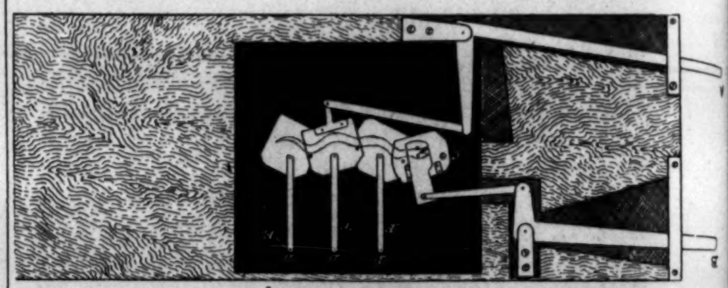


Fig. XL.

This remarkable piece of mechanism is now in possession of the writer, and will be found illustrated at Fig. XL. It bears a certain family resemblance to Fig. XXXIX., as the actual painted portion is drawn upon small plates of mica. The usual framework of wood contains a square brass plate, shown by the blacked out portion of our diagram. In the centre of this plate is an opening of sufficient breadth and length to show the serpent even in his most acute contortions, and covering this opening are four plates of mica loosely rivetted together at their edges, and upon these plates the figure of the serpent is painted.

On reference to our diagram, it will be seen that if the lever A is gradually pushed downwards, the four plates of mica will leave the angular positions in which we have represented them, and form a straight line; but as that will cause the combination to become elongated, and the whole affair is fastened to the brass plate by the screw C, it is necessary that the centres upon which they work shall not be fixed, but shall allow a little play towards the right hand side of the slide. To accomplish this the rivets through the centre of the plates are not fastened directly into the brass plate, but are secured to metal levers D, which working on the pivots E, allow the necessary amount of latitude.

By working the lever A slowly upwards and downwards, it will be seen that the serpent apparently bends its body to and fro, the forward motion being obtained by pushing the slide bodily through a loose outer frame. The lever B is quite independent of A, and is simply used to work the serpent's lower jaw, causing the mouth to open and shut.

It is difficult by mere words to convey an adequate idea of the extreme realism of this wonderful mechanical slide, but it is to be hoped that the description of its working parts may excite in the minds of ingenious lanternists a desire to possess a similar piece of mechanism, and to further their efforts we hope in the next paper to give in detail all the separate portions of which it is composed.

The Correct Presentation of Dioramic Effects.

By THE SHOWMAN.

Continued from page 155.

Do not think that a tiny chip of wood is not worth troubling about, for, remember, it attains the proportions of a very fair log when the slide is enlarged to 20 feet. Operators who have much to do with registered effects know this, and may be observed to occasionally blow along the runners during the evening. The stop is attached by two cheese-head screws. This is preferable to casting it in one piece with the runner, as giving a better chance for filing a perfectly true face on the latter. Fig. II. is the adjustable runner for the top and bottom lanterns. It is placed as nearly as possible in its correct position, and held by one screw at S, inserted as before. This must be tight enough to support the runner firmly, but not so tight as to prevent it swinging through an arc of two or three degrees.

The final adjustment is made after the lantern is lighted by means of the two small taper-pointed screws bearing on the pillar nearest the operator. Slacking off the lower screw and tightening the upper one raises the end on the working side and lowers the further one. The reverse process has the opposite effect, and tightening up either screw locks the other. In this way the adjustable runner may easily be brought into exact parallelism with the fixed one, and, if the work has been done with a fair amount of precision, a movement at the working side of a sixteenth of an inch in **either direction** will be found ample. The stop is adjustable, and is formed by the greater portion of the cheese-head of a rather long screw, which is manipulated between the finger and thumb, and locked when in position by the milled nut shown. From the arrangement of the runners illustrated it will be noticed that it is impossible for them to get out of place in travelling, a most important point in choosing a runner.

Those who have carefully followed the very excellent series of articles on lantern effects, by Mr. Edmund H. Wilkie, of West Hampstead, which has been running through the pages of the OPTICAL MAGIC LANTERN JOURNAL for the last twelve months, will be well acquainted with the various forms which dioramic effects take; in fact, that gentleman possesses such an exceedingly rich and rare fund of information on this subject, and, what is more, has this kind of work so much at heart, that one cannot do better than to consult him as to the choice of effects.

There is one point on which the beginner must be warned before dismissing this subject, *i.e.*, effects are often offered for sale which it is impossible to register, owing to the fact that they do not match. A stereoscopic pair of photographs can never be registered for obvious reasons, so it is useless ever to attempt making such into effects. Nor is this defect confined to photographic slides of the less expensive kinds, for the writer has seen costly hand-painted work in which the artist appeared to have ignored any idea of registration, so that, in ordering slides from a strange source, it will be as well to specify this point as one in which they must not be found wanting. Such a fault can often be detected by careful scrutiny, holding two slides together and comparing the coincidence of prominent objects with well defined outlines all over the picture. If no fault can be thus plainly detected, but suspicion still exists, examination on the screen before registration will save trouble later on. Obtain two single carriers, or place the slides to be tested into blocks temporarily, and, having lit up the lantern, project both, sharply focused, on a 6 or 8 feet disc. Now select some particular line, say, to the extreme right of the picture, and by moving one slide make these lines exactly agree; now look at the left of the picture and see how the lines there correspond. Test the picture all over in this way, and you will soon see whether it is worth while attempting to register it or not, for if the objectives are known to be an exact pair as regards focal length, it follows that any fault noticeable in the projected picture must be due to the slides.

Another thing to be noted is, that the maximum supply of first-class hand work is not by any means large (photo-colouring is a different thing altogether), and at a certain time of the year the demand is greatly in excess of it; consequently it is as well to order this class of work as near the dog days as possible. There is a large variety of **first-class subjects** already obtainable, and an ingenious person will have no difficulty in originating effects for himself. For many reasons it will be best to frame all ordinary slides as well as effects, if only to preserve them from getting broken, and an important point to settle is the width of frame to adopt, and, when settled, it must be adhered to, as in all lantern matters system is all-important. The standard size is 7 inches long by 4½ inches wide, and all mechanical movements are workable in this width. It is excessive, however, for ordinary slides, and many persons, objecting to the slight extra weight and bulk, adopt a width of 4 inches for all frames, thus precluding the use of some mechanical movements which cannot be arranged in that size.

Some time ago Mr. Wilkie was kind enough to show the writer a method adopted by him, and used for a great many years, by which a sort of compromise is effected, the benefit of the narrow size being obtained in the case of ordinary slides, without sacrificing or modifying any mechanical movement. It consists in employing 4½ inch frames for all slides, and, after registering, in cutting half an inch in width from the top rail (when in the lantern) of all ordinary blocks. This is shown by the line A B, Fig. III. It is conceivable that, under certain circumstances, direct light from the condenser would reach the bottom of the screen by passing over the frame at the narrow part, so that, if this method is adopted, means should be taken to prevent this, should it occur.

The right hand top corner of all frames should be cut off as at C, Fig. III. This will not only show at a glance if all slides are right way up or not, after arranging, but the flat thus formed will naturally come under the finger as the slides are placed in the stages, and any possibility of getting a slide upside down thereby obviated. Blocks can be obtained with one side and one end slightly wider than their respective fellows, so as to allow for planing away in registering.

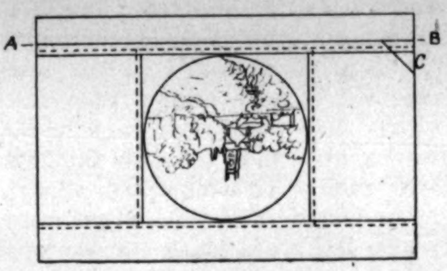


Fig. III.

It is also well to lay in a stock of good masks all cut by the same die, so as to have all pictures the same size and shape. Circles are the easiest to register but are seldom adopted nowadays; domes, ovals, and other fancy shapes are often so badly cut as to be out of the question; as good a form as any is a fair-sized square with a small radius in the corners. This will meet all requirements if it is sharply cut with perfectly straight edges, and is not long-cornered, that is, slightly lozenge shaped.

A few ordinary tools, including a glue pot, will be necessary for registering slides, and we shall also require a trying-plane and shooting board. Of the latter, the plane-travel should be about 6 inches longer than the plane itself, and the table for the work should be about 9 inches long by 6 inches wide, and a quarter of an inch below the centre of the face of the plane, also dead square to the latter. In order that effects may register in any of the stages, it will be necessary, in every case, to adjust the lantern fronts by means of gauges known to be exact. Such "registering templates" may be purchased, but, as the greatest exactitude is necessary, those lanternists who are photographers will probably prefer to make them for themselves. A simple diagram consisting of a vertical and a horizontal line would do, but an excellent design is shown in Fig. IV. With drawing-pen, compass, and square, describe this figure on white paper or cardboard in black Indian ink lines $\frac{1}{32}$ inch thick, making the circle 18 inches in diameter, and the square

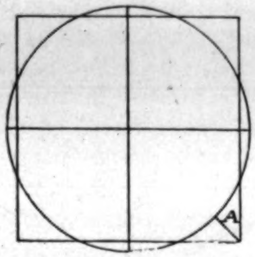


Fig. IV.

16½ inches across. Do not forget the short diagonal line at A. Copy this in the camera, making the circle exactly 3 inches on the focusing screen, and from the negative print two lantern slides by contact. Cover glasses and binding, without masks, will complete them.

Now select two well-seasoned blocks of the size adopted, and fix the two templates firmly in them by means of glue and strips of cardboard, glueing in the end of the block at the same time. This must be done in such a manner as to render the glasses absolutely immovable. The line A will enable us to identify the corners, and to get both slides the same way about, and will thus save any vexation later on, caused by the twisting of one of the templates, revealing a slight want of squareness in the diagram. See that the measurements from the horizontal line to the edge and from the vertical line to the end are slightly in excess of what is required, and, with the plane, which must always be kept sharp and finely set, shoot off the bottom edge until it is parallel with the horizontal line at a distance of 2 or 2¼ inches, as the case may be; then square off the end until it is 3½ inches from the vertical line.

Do this to one frame only. Next, light up one lantern, place this slide on the runner and against the stop, and focus sharply on a wall or small screen. Mark the position of the vertical and horizontal lines very carefully by pencil marks or rows of pins, remove this slide and shoot the frame of its fellow until the lines projected by it from the same stage agree with the marks. Great care must be used in doing this, even the temperature of the glasses should correspond, and the slides may next be tested, as follows:—Light up another lantern, and register it with the one already in use by means of the templates. A slight divergence of the square and the circle at the top and bottom may be due to the inclination of the fronts, but if they do not coincide where the horizontal line intersects, the objectives are not of the same focus, and nothing further can be done until this is remedied. This is one reason for introducing the square and circle into the diagram; another is to show us where our picture, either square or circular, will come on the screen. If the lenses are satisfactory, change stages with the templates. Do the lines agree now? If so, the workmanship is highly creditable, as the enlargement of the slide would not only magnify the error, but changing the stages would double it. Thus, if with a circle of 6 feet diameter the error is a quarter of an inch, the discrepancy in the templates would be $\frac{1}{4} \div 2 \div 24 = \frac{1}{192}$ inch. It is quite possible to make templates correct to $\frac{1}{1000}$ inch by the method described.

With our templates satisfactory, we may now proceed to mount and register all our slides and effects. First of all, insert the masks selected, taking care they are all the same way up, and square to the objects in the view. All pictures are not square to the edge of the glass, and it is most unsightly to see a

vertical object

made to look out of perpendicular by a carelessly placed mask. In the case of effects, bear in mind that the edges must register as well as the details of the picture. Secure the slides firmly in frames, bearing in mind, if card has to be used, that it is slightly compressible. Then register the lantern carefully by means of the templates, and commence shooting the frames to bring the pictures into exact coincidence. Make frequent comparisons with one of the templates, so as to keep the picture central and upright. In the case of effects, register the whole series to the first slide of that series, so that an addition of minute errors may not lead to a palpable discrepancy between, say, No. 1 and No. 7. Register the first of each lecture set to a template, so that a slide may be introduced into another set without disagreement of margin, and, with this system carried out, any slide or effect will coincide with all other slides upon the screen.

Remember, above all things, that objects are reversed, and if a slide is too high, planing the frame will only make it higher, and so on. Thus, with perseverance and intelligence, the acme of perfection in registration may be attained.

SILHOUETTE SLIDES FOR THE OPTICAL LANTERN

By Theodore Brown

Fig. 4

THE drawing that forms the heading to this article shows the subject of slide No. 10 in the silhouette series. It represents two street arabs fighting. Now the actions and postures of two boys fighting are so varied and constantly changing that it would seem at first sight an impossibility to give an adequate representation of such on the screen. But that it is *not* an impossibility is shown by the fact that in this article the method of obtaining a really good illustration of a street fight will be described.

For the purpose of constructing this slide the usual wooden framework, fitted with two glasses, one fixed and the other movable, is employed. On the front fixed glass are painted a few objects, as shown in Fig. I. For instance, 9, 10, and 11 represent respectively the basket, coat and hat of one of the combatants. The wall and trees, etc., are also painted in black on this glass. Two small blocks are glued to the back of the fixed glass, and two pins (4, 4, Fig. I.) fixed in them. One of these blocks and pins is shown in Fig. III., which is a sectional view of the working parts of one of the fighters.

We must now turn our attention to the construction of the fighters themselves. The method of construction is the same in both cases, so a detailed description of one only is required.

The body is first cut out of a piece of metal to the shape shown in Fig. II. The proper holes having been made, the small projecting pieces are bent over at right angles, at the dotted lines. The upper parts of the arms and legs are also cut to the shape shown in Fig. II., and the projections there represented are also bent over in the same manner as the others. The head and lower parts of the arms and legs are then cut out and pivoted at the proper places by means of small pins. It will be noticed that both arms and both legs are pivoted to the body in only two (not four) different places. The pins 4, 4, attached to the blocks before-mentioned, are now used as pivots on which the two bodies are free to turn. (This is clearly shown in Fig. III.)

On the interior surface of the movable glass are now fastened two small blocks (2, 2, Fig. I.) furnished with two screws 3, 3, which work in the slots cut in the bodies of the fighters. On this sliding glass C is also glued a block G, provided with a pin F, which works in a slot E cut in the framework. It must be borne in mind that the slide is placed in the lantern upside down. The different parts of the combatants will thus fall to their proper perpendiculars.

Fig I.

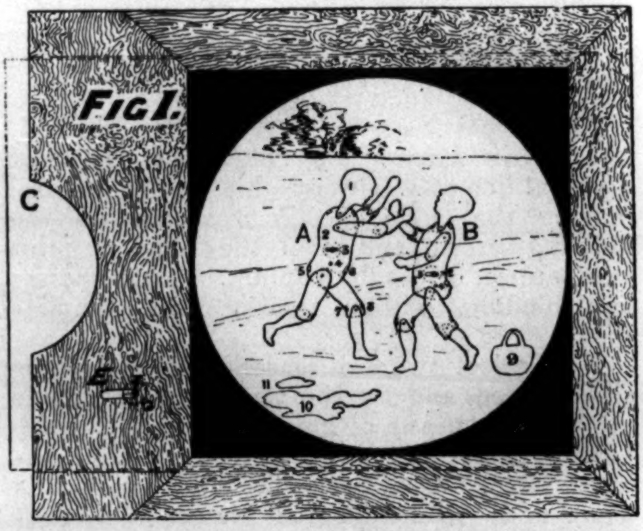


Fig. I. shows the sliding glass pushed in. When it is pulled out the fighter A will be pulled backwards by the action of the screw 3 working in the slot, and his legs and arms will consequently assume new perpendiculars. Now the use of the small projections in body, arms and legs becomes apparent. They serve to check the course of the pivoted parts, and prevent them falling right out of place into impossible attitudes. But we have not yet considered what effect our pulling the sliding glass out will have upon B.

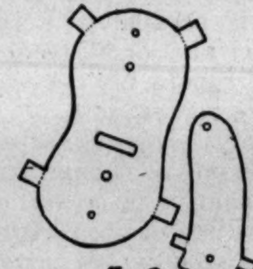


Fig. 2.

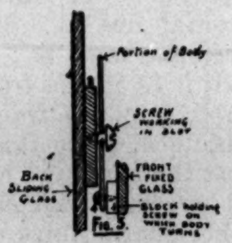


Fig. 3.

By a reference to Fig. I. this is easy to see. At the same instant as A is pulled back B will be pulled forward, and thus will be conveyed the idea of one boy drawing back to guard the blows of the other, who leans forward to deal them.

The positions into which the heads and limbs of the two fighters will fall when the glass c is pushed in and out at varying rates will be of endless variety, and will constantly change, thus giving a fairly true representation of two street arabs fighting. Fig. IV., at the head of this article, is only one of the thousands of attitudes that will be so obtained.

The Lanternist's Outfit as it was—and is.

By W. H. GOLDING.

THOSE of us whose memory can carry them back over comparatively few years, will not fail to be forcibly reminded that the old order changeth, giving place to the new. We shall recall the mysterious instrument of our early days, with its japanned tin body surmounted by a lofty chimney of curved or angular outline, suggestive of the ingenuity of some eccentric smoke-doctor; its oil lamp constructed on the Argand or the bird-fountain principle, burning colza, or some heavy vegetable oil, and requiring to be carefully warmed and accurately levelled in order to secure an adequate and uniform supply to the wick; its lenses whose correction for aberration, both spherical and chromatic, left much to be desired, and by whose aid the straight lines, especially near the margin of the picture, were converted into graceful curves and adorned with fringes of the richest prismatic colours.

The sheet, too, probably borrowed from the store of household linen, and saturated with water, behind which the instrument was concealed, leaving the imagination of the spectators to picture the details of the operator's manipulation, and on which the antics of the juggler, the contortions of countenance of the sleeper as the rats and mice entered his mouth, and the other wonderful appearances produced by the aid of the comic slipping slide were projected to the delight of the juvenile audience for whose entertainment the instrument was most frequently employed, and to whose wondering eyes it seemed well to merit the name of a "magic" lantern, a title which, without prejudice to that which heads this page, might with great advantage be abandoned as a relic of the past, which has served its purpose. The evolution and development of the optical lantern have been treated of time after time; and the modern instruments devoted to the illustration of the beauties of nature and art and of the deepest mysteries of scientific research, seem to bear but a distant resemblance to those of years gone by. And yet these old and comparatively crude appliances were sometimes capable, in skilful hands, of producing excellent results, despite their optical imperfections and the feebleness of the illumination.

The hand paintings of such artists as Childe and Hill and many others whose names will occur to the frequenters of the old Polytechnic and similar institutions, were marvels of artistic skill and ingenuity, and some of the more ordinary pictures were admirably adapted to serve their purpose, such, for example, as the old-fashioned chromatrope, whose complicated movements, produced by very simple means, seldom failed to delight the youthful spectator or to puzzle the brain of the uninitiated. When, at the suggestion of the late Mr. Dancer, of Manchester, the limelight, or as it was originally called the **Drummond light,** came into general use as a means of lantern illumination, and the boundless possibilities of photography as a method for the production of slides came to be realised, the modern era may be said to have had its commencement and the lantern to have taken its proper place as a medium for lecture illustration, a new set of appliances came into requisition and a new series of difficulties had to be encountered by the user and his assistants.

The old side by side lanterns, excellent in their way, but cumbersome for conveyance and inconvenient in manipulation, speedily gave place to the bi-unial and the more pretentious triple arrangement, in order to afford facilities for elaborate effects requiring the use of two or more slides, though some of the ablest lecturers, like the late Mr. W. R. May, remained faithful to the single lantern, as supplying all that was needed for efficient lecture illustration. By this time the lanternist's appliances had acquired a most formidable bulk and weight; large and heavy pressure boards of substantial make, a pair for each of the gases employed; large gas bags of india-rubber cloth, costly to produce and to keep in repair, singularly liable to injury from apparently trifling and unforeseen causes, with a most perverse tendency to develop a leak at the most inopportune moment, and on the slightest provocation; these were among the encumbrances which required the anxious care of the exhibitor, the slightest hitch in the arrangements being fatal to complete success, and a source of unbounded delight and unconcealed mirth to the mischievous youth or the more malicious practical joker. And how readily these mishaps occurred! How it tasked the skill, forethought, and patience of the most experienced manipulator to guard against them all, and to preserve his appliances from the ill-timed curiosity of the inquisitive, the blunders of the ignorant, and the well-meant but unwelcome suggestions and awkward assistance of the ignorant; while the

Inexperienced operator

more frequently than otherwise became hopelessly at sea long before his work was done, and that in full view of an unsympathising and hypercritical audience. These adventures and vicissitudes were by no means without their humorous side. One unlucky wight had the pleasure of making the acquaintance of the amiable old lady who, on entering the lecture room, removed her shawl, and seating herself close behind the gas-bag, selected that as a tempting and convenient cushion for the reception of the pin or brooch with which the garment had been fastened around her venerable shoulders. Some of us will recollect the audience who, on the accidental escape of the contents of a bag, were, according to the local newspaper reporter, nearly suffocated by the fumes of oxygen gas!

The writer has a lively recollection of the incompetent assistant who hastily deposited a full gas-bag and the package containing the screen in the luggage-van of a crowded train on the Metropolitan Railway, leaving himself, the lecturer, and the remainder of the apparatus to follow by the next; and of the frantic, but happily successful, efforts to supply the place of the missing articles in time for use. Nor does he fail to entertain the memory, grateful or otherwise, of the intelligent officials on a Northern line of railway, who removed the luggage from the van at an intermediate station, and carefully distributed packages, all duly labelled for a station in Westmorland, between various trains proceeding in different directions, one of them finding its way to Liverpool, others being discovered some hours later in a train passing through Preston, from which places they had eventually to be collected, with much loss of time and patience.

The ingenious youth at a Northern hotel, who enquired whether he might "let out the wind" from a bag containing oxygen, in order that it might be more conveniently packed; and the equally brilliant railway authorities who gave practical effect to a similar idea by delivering, carefully emptied and folded, and some days behind time, a bag which had been filled with gas when it was entrusted to their unskilful keeping, have also their places among personal reminiscences of the days that are past. A well-known and highly respected lecturer, already referred to, had a still more remarkable experience on one of our railways. He had sent to meet him at a certain station a bag filled with a mixture of hydrogen and oxygen to be used with a safety jet adapted for burning the mixed gases by having its tubes filled with a bundle of wires, between the interstices of which the gas was forced by very heavy pressure. Such an arrangement could be employed with perfect safety by a competent person, and with proper precautions, but in careless and inexperienced hands it was about as dangerous as a powder magazine or a charge of dynamite. And so it proved, for an inquisitive railway official turned the tap, applied a light, and produced a result more readily imagined than described. "And the worst of it was," said the owner of the apparatus, "I was never able to get any compensation from the railway company for destroying my gas-bag."

The risk of damage to bags and the loss of their contents rendered it undesirable to send or carry them full unless where time was pressing; and usually the lanternist carried the retort and purifier, with a supply of material for the manufacture of oxygen on the spot. But these added considerably to the weight and bulk of his baggage, and to keep them in working order involved additional care and forethought on his part. Then the ponderous

iron weights

necessary for obtaining the requisite pressure were too heavy to be carried, except for very short distances, and were not always readily obtained when wanted on the spot at which the exhibition was to take place, and strange substitutes had sometimes to be sought for, demanding no little inventive genius on the part of the operator. A slab of marble from the kitchen, a mowing machine from the garden, or some heavy piece of domestic furniture, had sometimes to be pressed into the service of science, or possibly bricks or paving stones had to be called into requisition.

Naturally the progress of human skill and ingenuity suggested remedies for these various difficulties and inconveniences. A convenient form of pressure board contrived to economise weight and space, and to ensure a regular and uniform pressure—which was described and figured in this Journal some time since by Mr. E. H. Wilkie, after being used by that gentleman and by the present writer, and possibly by others, for several years—was eventually patented by an inventor in the North of England, who appointed a London firm of engineers his agents for the manufacture and sale of the apparatus, and threatened all who attempted to use it without his gracious license with the direst penalties of the law, penalties which, so far as the writer knows, were never enforced, and probably never could be.

Well, the inexorable march of time and progress has changed many of these things and relegated them to what is rapidly becoming the far distant past. Improvements in the means of compressing gases and their retention and use under extreme pressure, have practically abolished the use of the gas-bag and pressure boards except in special cases, or in places at a distance from large towns or other centres of communication with the outside world. Yet even these improved methods of working have not been unattended with disadvantages peculiar to themselves, and have necessitated new and special precautions. The extremely high pressures employed have imposed the severest tests upon weak points in the tubes, taps, and other parts of the apparatus.

Occasional accidents,

though very few in proportion to the enormous quantities of compressed gas used, have in many cases led to the adoption of precautions on the part of railway and steamship companies, the proprietors of halls, and various public authorities, more suggestive of panic than of reason, and tending often to make the use of the gas in this form more difficult without rendering it more safe.

Unreasoning prejudice has not infrequently caused much inconvenience to the practical lanternist and to those who supply his needs—prejudice which dies hard, but which time and experience will assuredly overcome. Our lanterns and their appliances are lighter and less cumbersome than they were, while certainly not less efficient; though the demand for lightness and portability may, like many other demands, be pushed too far, and lead to a loss of strength and durability. The rapid increase in the use of electricity as a means of lighting has placed new facilities at the disposal of the lanternist, calculated to supersede, in many cases, older methods and appliances, and perhaps eventually to revolutionise our modes of working, while the use of acetylene gas provides a substitute for the older illuminants whose development has probably reached only a very elementary stage, and the opening years of the twentieth century may witness advances and improvements which will far exceed those already reached. One note of warning. Let the lanternist who depends upon a supply of gas from the main, beware of buildings lighted by electricity, as well as of small places where only mineral oils are employed, lest he should find that no gas-pipe is within reach, and make the discovery too late to enable him to supply his wants in any other way, an experience which the writer has narrowly escaped in more than one instance. *Verb. sap.*

* * *

Projection Microscope.

By G. R. BAKER.

THE marked improvement made in lantern microscopes of late years was clearly demonstrated some little time ago by Mr. Lewis Wright, at the Quekett Club Microscopical Society, when microscopic slides were projected on the screen with marvellous distinctness amplified to 6,000 diameters. The light employed on the occasion was the limelight produced by means of a jet designed by the demonstrator, and not, as I understand, yet made for sale. It did not consume an extraordinary amount of gas, and the orifice of the nipple was only $\frac{1}{16}$ of an inch diameter. It is interesting to know that in the opinion of the inventor a larger nipple is not much use with the microscope, as only the central spot is serviceable with power over 1,000 diameters, and lower power do not need more. With a $\frac{1}{7}$ inch low power oil lens by Reichert, and the electric arc lamp using 15 amperes of current, a projection of 11,000 diameters can be obtained quite sharply on the screen.

When one harks back to the microscopes of 25 years ago, this improvement is the more appreciated, and a *résumé* of the instruments or some of them developed in this period will be of interest.

Then the lantern microscope of commerce was of tubular form, with one or two slots for the insertion of slides with spring fittings to the inner tube to hold same in position. The lenses were simple plano-convex lenses, mounted in cells, two being placed so that their convex surfaces nearly touched. The focus of these lenses when complete were 2 inches, 1 inch, ¼ inch. For the higher powers a separate racked jacket was fitted, but generally a plain sliding tube adjustment was all that was provided. This microscope screwed into the lantern in place of the ordinary lantern front, and the centering of the same with the condenser was a matter of chance.

When one begins to work in earnest with the lantern microscope and attempts to use high power, it is soon discovered that the crux of the whole subject is perfect centering of the optical arrangement and light, and although the workmanship may be ever so good, unless all parts are rigidly fixed on a support and an independent adjustment provided for the lenses forming the condenser and illuminating system, good results cannot be obtained.

The employment of an eye-piece in addition to the lenses forming the object glass has been one of the greatest advances in microscopic projection, and the successful adaptation of the same to the modern and high-class instruments is largely due to Mr. Lewis Wright and Sir David Salomons, who have both shown such splendid results to critical audiences at the various meetings of learned societies.

I saw, however, a microscope for **lantern work,** made many years since by Mr. J. Browning, in which an eye-piece arrangement was provided, as also a rack focusing adjustment for the substage. The eye-piece was of a large diameter, and consequently low power, and the condenser was fixed so that no special centering could be made, hence although useful for moderate power, was not adapted for high power work.

A great point in favour of eye-piece projection is the clean and well defined disc that is produced on the screen, while with the direct projection from the object glass there is a wooliness or blurred disc of light, notwithstanding the care exercised in having a diaphragm aperture of the most suitable size for the object being shown. In some instruments the diaphragm wheel forms the actual stage, so as to get the aperture close to the object; in others a slot is made in the stage so as to insert a plate with an aperture in it of the size desired.

In the position indicated, the iris or graduating diaphragm is not so suitable, as a sharp outline or disc cannot be so well obtained, even when a diaphragm is composed of a great number of leaves to form an opening as near as possible like a circle; although it is a most valuable adjunct when placed below the substage condenser to regulate the amount of illumination according to the nature of the object.

Provision must be made for readily changing the objectives and condenser, for the focus of the latter must be varied according to the power (focus) of the former. Cover must be provided to each part to shut out extraneous light and prevent reflections from bright portions of the optical or mechanical arrangements reaching the screen, and each part of the apparatus must be conveniently placed that it is "get-at-able" in the dark, so that changes can be made rapidly and noiselessly.

Clothe the Naked.

By G. E. BROWN.

IF there is one thing in the whole world more chilling than another, it is the half hour spent, sometimes, waiting for a lantern lecture to begin—I say this from the point of view of a member of the audience not from the point of view of the lanternist, whose recollections of half hours immediately preceding exhibitions most probably suggest adjectives opposed to frigidity. But it is wise to look at the question from the standpoint of the patron as well as from that of the provider, and when you come to think that people have perchance waded through slush and fog and were content to wait in a draughty hall till the lecturer appeared, you must arrive at the conclusion that the optical lantern as a form of mental entertainment is not by any means dead yet, even if the lanternist is to a sense of his duty to his fellow-creatures when he lets them sit and gaze at that freezing expanse of white, unadorned, unrelieved by even the faintest suggestion of warmth.

I am anxious to insist with some force on the improvement derivable from the expenditure of the most modest sum in a few yards of art muslin of some glowing colour, with which to drape the poles of the screen frame. The time occupied is not worth considering, and the space into which yards of muslin can be packed is surprisingly small; the muslin just fills up all those chinks and corners in a lantern case, and keeps thing from rattling. Have a few pieces of it also for the lantern stand; it conceals the ugly construction of a box stand and in the case of tripod stands gives an air of solidity to the lantern support which inspires confidence in the minds of nervous old ladies to whom the tripod stand is a thing of mystery and therefore to be distrusted.

And then why should not this preliminary wait be made entertaining to the audience by the display of a series of self-explanatory slides? These might be humorous, such as reproductions of drawings from the pages of humorous journals, or really good landscapes, depending for their interest on their being views of places which everybody will know, or pictures such as hoar frost studies, figure studies, etc., which everybody will admire. The one necessary feature is that the title appear on the screen, if not with the picture, at any rate immediately before it, and the more miscellaneous the slides are the better. It is worth the while of all professional lanternists who have a stock of first-rate slides—and it is comparatively easy to make up a set of good miscellaneous slides—to quote for this addition to the evening's programme. Never more than at the present time were pictures so greatly in favour, as the

extraordinary popularity

of the illustrated journals evidences. Never was a time, either, when people read bits and scraps as they do now. To both of these popular tastes the preliminary lantern show panders, and it may be confidently recommended as an additional draw. It has the merit, too, of insuring the possibility of a punctual commencement, and possibly, in many cases, the lanternists may be able to make an honest penny by an advertisement slide here and there. I have in mind a bootmaker of a provincial town, who makes use of local lantern exhibitions and mechanical slides to attract public notice to "Jones's Boots."

Enough has been said, however, I hope to convince the reader, whether amateur or professional, that the adornment of the lantern screen, both with material draperies and with the impalpable image of the lantern, is a most desirable feature in the "fore-time" to a well regulated lantern show.

* * *

Missionaries supported by the Lantern.—The Rev. J. E. Reilly, of Omaha, U.S.A., speaking on the great value of the lantern in connection with missionary enterprise, states that he knew of one man in Omaho, U.S.A., to undertake the support of several native missionaries abroad as the result of a stereopticon address on Missions.

Large Illuminations.

By G. W. NASH.

WE live in an age of big things. Every new jet we see advertised gives more light, with less consumption of gas, than any similar one previously brought out; at least, the advertiser says so. There are, of course, occasions when a large flood of light is a necessity, and, fortunately, several well-known jets supply this requirement.

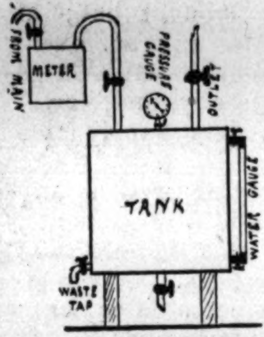
A good operator may be called upon at any time to illuminate large scenic arrangements, and one or two words on this subject may prove of interest to most lanternists. Of course, stock apparatus and appliances enter very largely into the question, and failing those it is better to pass on the order to some large firm who possesses the men, apparatus, and ability to do the work properly.

Many readers who have visited the Empress Theatre at Earl's Court, for example, may have noticed the large amount of limelight used there, and perhaps they have also looked with wonderment at the beautiful

results obtained

by Mr. Thomas Wootton, who was in charge, owing to his vast experience in this class of work. The man who has to buy all his oxygen and hydrogen in cylinders would soon calculate up an alarming bill for that alone. There were, I understand, eight lights in general use in front of the scenes, but some spectacular effects demand many more, which can be increased at short notice. These eight lights alone, however, required about 120 feet of coal gas for each performance. Oxygen gas, too, is always a heavy item, and must not be left out of our calculation, so any method of reducing the sum total will be welcome.

There is a method by which we can use coal-gas under pressure from the main without resorting to an injector jet. A good water pressure from the main is required, and of course gas must be laid on. Now, suppose you have a large closed tank of the necessary cubic capacity, connect this underneath with the water main, and at top with the gas main, and let each connection throughout be provided with its own tap. A tap is also required below to let out waste water after using the gas. In order to see the quantity of water and gas in the tank, a water gauge should also be fitted. A tube fitted to the top of the tank serves as an outlet for the gas, as shown in the illustration. The tap from gas main must always be kept carefully turned off while using gas from the tank. Now suppose we have the tank filled with water, and desire to fill it for use with gas, turn on the gas at the meter and then open the outlet for waste water, having all others closed. It is evident that the water will gradually leave the tank, thus enabling the gas to supply its place. The tank being full of gas, which is ascertained by the gauge, we close the water waste, and then turn off at the meter. If we now turn on the water at the main we have the pressure below the gas, and can use it at a pressure varying with the force given by the water. A pressure gauge should be used also to show the pressure we are dealing with, as of course the oxygen supply must be carefully regulated to balance it. A container could be used for the oxygen, and the gauge carefully watched to prevent the pressure becoming too high. Very careful attention to all the details should be given, as they are necessary to proper working. These remarks will show the reader that a considerable amount of unusual apparatus is needed in this work, and the cost must be counted beforehand. In the limelight arrangements at the Empress Theatre, alluded to above, instead of the ordinary light box being used, the light is concentrated by reflectors, which consist of a bowl of copper silvered and suitably mounted, with the jet in front; the incandescent portion of the lime facing the reflector, and not the surface to be illuminated. The limes used (often) are what are known as "cup limes," having no central hole for the pin as we usually see. They are also longer than those in ordinary use.



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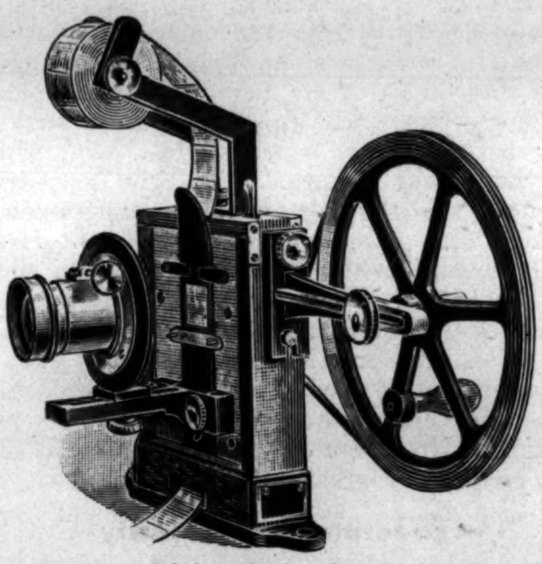
NEW APPARATUS.

SLIDES BY MR. JOHN STABB.

Mr. John Stabb, late of Bayswater, has removed to Babbicombe Road, Torquay, where he will continue to issue his excellent sets of lantern slides, consisting of cathedrals, abbeys, London views, in addition to Parisian and numerous sets. We have received several samples of these slides, and find them not only of good detail and colour, but bound and finished with great care.

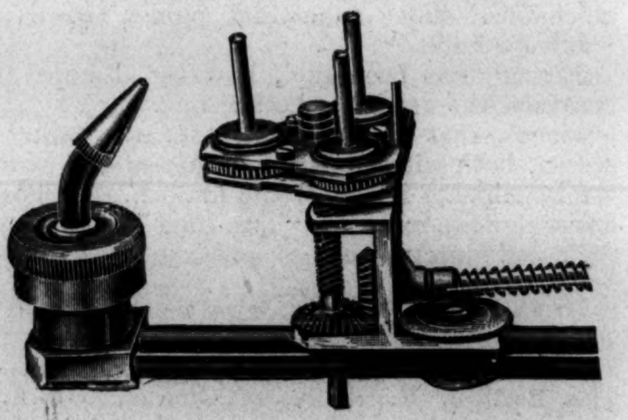
"PRIMUS" NOVELTIES.

A cinematographic attachment for lanterns has been issued by Messrs. Butcher & Son, which can be secured to almost any lantern body at a moment's notice. The lower part (see illustration) is of cast metal for screwing to the lantern base. The film is brought forward by two pins, which engage in the perforations of the film. These pins recede when the film has been brought forward to the required distance, and remain thus until they again reach the top. For the benefit of dealers not printing their own catalogue, Messrs. Butcher & Son will supply a catalogue of their apparatus with any name and address, at the rate of 250 for 25s.



TRIPLE LIME SUPPORT.

In our October issue we gave a small illustration of this support or changer, which was registered by Mr. Tyler. We are informed that Messrs. Butcher & Son have made special arrangements for supplying it from stock. We can only reiterate the remarks we made in the October Journal, but are enabled to give a larger and clearer illustration of this handy mechanism.

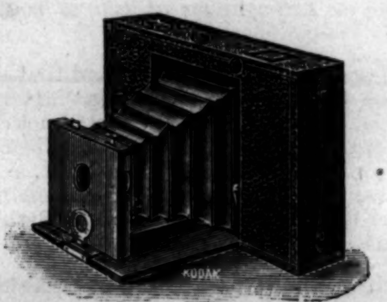


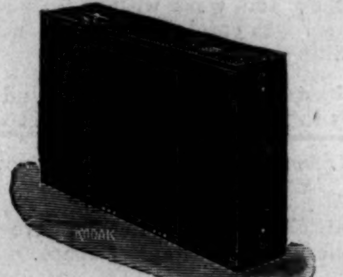
"OPERATORS' GUIDE" AND BOER SLIDES.

The seventh edition of the "Operators' Guide" has just been issued by Messrs. Riley Brothers, of Bradford. By following the plainly written instructions of the various kinds of lantern apparatus, etc., explained, the inexperienced will find most useful help. The price of this book is 3d. Messrs. Riley Brothers have also brought out a very complete set of slides illustrative of the points of interest in the Transvaal, together with a lecture reading written by Mr. J. H. Riddette, who, having been an "Outlander," writes from a personal knowledge of the country and people. Many of the photographs are of his own taking. There are altogether 65 slides in the set. We understand that the making of slides for this set is being continued both day and night, and that orders can only be supplied in rotation.

NO. 2 FOLDING BULL'S-EYE KODAK.

The No. 2 folding bull's-eye kodak is on the cartridge system, and takes a spool of film for 12 exposures 3½ by 3½ inches. It is provided with an entirely new arrangement in the form of a removable spool-holder, which renders the operation of recharging the camera exceedingly simple and easy. Constructed of wood covered with leather, the new kodak is extremely light, and is conveniently carried by means of the handle attached to the end of the camera, or it may be slipped into an overcoat pocket. Stand as well as hand work may be undertaken, as the baseboard is provided with socket for tripod screw.





PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No. RECENT PATENT APPLICATIONS.

20753. 17th October, 1899. Simon Biheller. Improvements in lanterns or globes, chiefly for incandescent gas lights, arc electric lights, and the like. (Complete.)

21133. 23rd October, 1899. Max Oberlaender. Improvements in strotoscopes with exchangeable plates for representing movable objects.

21222. 24th October, 1899. Charles Oliver. An improved projector arc lamp.

21430. 26th October, 1899. Louis Joseph Emmanuel Colardeau and Jules Richard. Improvements in and relating to automatic apparatus for successively presenting to view photographic or other pictures or slides in stereoscopes, optical lanterns, and the like.

21754. 31st October, 1899. Elias Bernard Koopman. Improvements in consecutive view apparatus. (Complete.)

21755. 31st October, 1899. Elias Bernard Koopman. Improvements in consecutive view apparatus. (Complete.)

21756. 31st October, 1899. Elias Bernard Koopman. Improvements in consecutive view apparatus. (Complete.)

21863. 1st November, 1899. John Alfred Prestwich. Improvements in kinematographic apparatus.

21880. 1st November, 1899. William Friese-Greene and Franck Zevely Maguire. Improvements in or relating to kinetoscopic or cinematographic apparatus.

22180. 6th November, 1899. Alfred Julius Boult (Marie Louise Fuller, France). Improvements in or relating to mirror apparatus for scenic effects. (Complete.)

22289. 7th November, 1899. Hedley Oliver. Improvements in photographic apparatus for the production of animated pictures.

22622. 13th November, 1899. Percival Warwick Davies and Hugh Haswell Shanks. Improved method of and means for producing and exhibiting kinetoscopic and like pictures.

22954. 17th November, 1899. Ladislaus Emanuel Granichstaedten. Improvements in kinematographs.

SPECIFICATIONS ACCEPTED.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

21371 of 1898. Baron. Apparatus for taking and reproducing animated scenes and sounds. (Date applied for under International Convention, April, 4th, 1898.)

24290 of 1898. Simonau. Cinematographic apparatus.

11360 of 1899. Faure and Dufossée. Coin-freed apparatus for exhibiting transparent photographic views and the like.

21649 of 1898. Friese-Greene. Taking and projecting photographic images, means therefore, and photographic negatives.

22713 of 1898. Mortier. Kinematographic apparatus. (Date applied for under International Convention, June 2nd, 1898.)

27448 of 1898. Pierpont. Optical lanterns and other apparatus for displaying advertisements and other similar purposes.

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Correspondence.

VOTE OF THANKS TO THE LANTERNIST.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—I believe the above has formed the subject of a letter in your valuable columns in a former issue, but perhaps you will kindly give me a little space to again ventilate what is undoubtedly a sore point with many.

The lanternist takes his valuable apparatus (for it must be valuable nowadays if he is to get anything like a decent result) to the hall or school, spends hours fixing up, stands over a hot lantern for 2 hours or more, packs his traps, and reaches home tired and ofttimes disgusted; and why? Not because of the bit of hard work, for he is no lazy man who will undertake lantern work, but because there is at more than 50 per cent. of the lantern shows not a word of public thanks for all he has done. Even the lecturer (or reader) in the feeling of self-satisfaction after the often effusive vote of thanks, entirely forgets the hard worker to whom he is indebted for the very success of his lecture.

I know several lanternists who have worked throughout a season, and not a word of thanks has been said except the usual "Thanks, good-night," shouted across the room by any person connected with the institution who may happen to be the last to leave. Whether these people at the head of affairs are under the impression that the lanternist lives on the few shillings they pay him, which in fact very often does not pay out of pocket expenses, to say nothing of the heavy wear and tear of apparatus, or whether the omission of public thanks to him is really an oversight, matters not; it is not in the least excusable, and shows a regrettable neglect of ordinary courtesy to the one person who often above all others does most towards the evening's entertainment.

I have several times mentioned the matter to those concerned, and think it is the duty of every lanternist to do so if not for his own sake, for the sake of his brothers who may come among the same grateful (?) crew.

Yours truly,

F. W. C.

FATAL ACETYLENE EXPLOSION.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—In your current issue you have a paragraph headed "Fatal Acetylene Explosion." We have had a full report of the unfortunate accident, and find that the manager of the Decorated Tiles Company was experimenting with a mixture of oxygen and acetylene. It is, therefore, incorrect to say it was an explosion of acetylene. A similar combination of oxygen and coal gas would have had the same result, but you would not have described it as an explosion of coal gas.

Yours truly,

THORN & HODDLE.

Notes and Queries.

A. E. Biddle.—You will find that an ordinary oxy-hydrogen jet either of the blow-through or mixed chamber pattern with the gases will answer admirably for a blowpipe and the heat that you will obtain will be something tremendous.

Perplexed writes:—Can you inform me of a plan to keep what is termed self-toning paper flat during the washing and other operations without pinning the corners down. I have tried the suggestions contained in the packets but without success; I have pressed the print film side down in a shallow dish containing only a little water and have even held them thus for a long time, but as soon as they are released they coil up again, the same applies to the hypo solution and the drying. In fact, I could have toned and fixed several dozen printing-out prints in the time I have expended with half-a-dozen on the paper alluded to. *Ans.*—We are unable to supply any remedy; perhaps some of our readers can.

W. J. Gameson.—The jet is good in every respect either with house gas and cylinder oxygen or both gases from cylinders.

J. R. Lennie.—We are not surprised that you could not dissolve on the "illumination slide." It is very carelessly made, and many of the lines will not coincide with the subject slide. It could be altered by blocking out the lines of rows of light which do not agree, and scratching clear parts in the proper place. The illumination at the top of the dome is very much out. Both slides have been returned.

M.—Consult the volume of this Journal for 1895.

R. Ross writes:—I remember reading a few years ago in your Journal about a cylinder gauge which was filled up in such a manner that the gas itself did not enter therein, so that it could be used indiscriminately for both oxygen and hydrogen without fear of any explosion through mixed gas. Can you describe how a gauge may be so filled up, and what with. *Ans.*—We understand that soft soap was employed, but are not able to give details of filling.

A. B. Coleman.—For the lantern behind the screen, use an ordinary thin screen, and keep it wet with water.

H. J. Williams.—We duly forwarded your letter to the author.

Several articles which are in type have had to be held over until next issue for want of space.

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BEST WISHES + + +

+ + + FOR XMASTIDE